We claim:

1. In a method for charging a valve-regulated, lead-acid (VRLA) cell at a charge voltage which has a value that is slightly in excess of the value of the open-circuit voltage of the cell, said cell including, in spaced relationship, a positive electrode and a negative electrode, and sandwiched therebetween electrolyte-containing separator means in which electrolyte is contained, wherein, during charging of the cell, there is produced at the positive and negative electrodes respectively oxygen gas and hydrogen gas in a predetermined amount, a portion of the oxygen gas tending to migrate through the electrolyte-containing separator means to the negative electrode and cause depolarization thereof, and wherein there is also formed at the positive electrode hydrogen ions which migrate to the negative electrode to form hydrogen gas in an amount less than said predetermined amount, the negative electrode tending to discharge over a prolonged period of time during charging, the improvement comprising inhibiting the tendency of the negative electrode to discharge during charging by controlling the amount of oxygen gas in the cell by catalytically converting a portion of the oxygen gas and a portion of the predetermined amount of hydrogen gas to water.

2. A method according to Claim 1 wherein the charge voltage is no greater than about 0.3 volt in excess of the value of the open-circuit voltage in an application in which there is an intermittent flow of current.

3. A method according to Claim 1 wherein the charge voltage is no greater than about 0.2 volt in excess of the value of the open-circuit voltage in an application in which the flow of current is uninterrupted.

4. An electric cell comprising:

(A) a sealed housing;

(B) a positive electrode positioned in the housing;

(C) a negative electrode positioned in the housing in spaced relationship from the positive electrode;

(D) electrolyte-containing separator means positioned between said electrodes and containing electrolyte;

(E) a gas space within said housing;

(F) a pressure relief valve which allows gas to escape from the housing and which prevents oxygen gas from outside the housing to contact said negative electrode;

(G) a catalyst in gas communication with the gas space for converting oxygen gas and hydrogen gas which is generated in said housing to water; and

(H) means for charging the cell at a charge voltage having a value which is slightly in excess of the value of the open-circuit voltage of the cell.

5. A cell according to Claim 4, wherein the means for charging the cell provides an uninterrupted flow of current.

6. A cell according to Claim 4, wherein the means for charging the battery provides an intermittent flow of current.

7. An electric cell comprising:

a sealed housing;

a positive electrode positioned in the housing;

a negative electrode positioned in the housing in spaced relationship from the positive electrode;

an electrolyte in said housing in contact with said positive and negative electrodes;

a gas space within said housing;

a pressure relief valve which allows gas to escape from the housing and which prevents oxygen gas from outside the housing to contact said negative electrode;

a gas-permeable catalyst container in gas communication with said gas space, said container comprising a flame arresting material having pores of suitable size to permit gas to pass therethrough while being a barrier to a

flame, said container being encased in a gas-permeable hydrophobic coating; and

a catalyst arranged in said catalyst container for converting oxygen gas and hydrogen gas which is generated in the housing to water.

8. An electrical cell in accordance with claim 7 further comprising:

means for charging the cell at a charge voltage having a value which is slightly in excess of the value of the open-circuit voltage of the cell.

9. A cell according to claim 7 wherein said electrolyte is an immobilized electrolyte suitable for lead-acid cells.

10. A cell according to Claim 8, wherein the means for charging the cell provides an uninterrupted flow of current.

11. A cell according to Claim 8, wherein the means for charging the battery provides an intermittent flow of current.

12. A cell according to Claim 7, wherein said catalyst container is secured to said relief valve to be removable from the housing with said relief valve.

13. A cell according to claim 7 wherein said catalyst comprises an amount of catalyst no larger than .025 grams of active material.

14. A cell according to claim 7 wherein said catalyst container comprises a ceramic material and said hydrophobic coating comprises PTFE.

15. A device for recombining gases in a storage battery; comprising:

a gas-permeable catalyst container, said container comprising a flame arresting material having pores of

suitable size to permit gas to pass therethrough and which acts as a barrier to a flame;

a catalyst arranged within said container; and

a gas-permeable hydrophobic coating encasing said container.

16. A device in accordance with claim 15 wherein said flame arrestor comprises a ceramic material.

17. A device in accordance with claim 15 wherein said hydrophobic coating comprises a film of PTFE.

18. A device in accordance with claim 17 wherein said film has a thickness in the range of about .002 inches to .003 inches.

19. A device in accordance with claim 17 wherein said film has a pore size of about .22 microns.

20. A device in accordance with claim 16 wherein said hydrophobic coating is formed by soaking said vessel in a PTFE solution.

21. A device in accordance with claim 20 wherein said coating is formed by the following steps:

(1) dipping said vessel in a PTFE solution,

(2) drying said dipped vessel by heating it at a temperature between about 100 to about 120 degrees Celsius.

22. A device in accordance with claim 16 wherein said ceramic vessel has an outside diameter of about .6 inches, an inside diameter of about .38 inches, and comprises alumina-porcelain.

23. A device in accordance with claim 15 wherein said container is cylindrical.

24. A device in accordance with claim 16 wherein said container has an opening at an end of said vessel through

which the catalyst is added, said opening being sealed closed with an epoxy.

25. A device in accordance with claim 17 having four layers of said film.

26. A device according to claim 15 wherein the catalyst comprises an amount less than about .025 grams of active material.

27. A vent assembly for sealing a VRLA battery cell having a sealed housing and a gas space within said housing, said device comprising:

a vent body through which gas from inside the housing can vent to outside the housing;

a pressure relief valve member within said vent body to allow excess gas to escape from the housing and which prevents gas outside the housing from entering the housing;

a gas-permeable catalyst container supported on said body to be in gas communication with said gas space when said vent assembly seals the battery cell, said catalyst container comprising a flame arresting material having pores of suitable size to permit gas to pass therethrough while being a barrier to a flame, said container being encased in a gas-permeable hydrophobic coating; and

a catalyst arranged in said catalyst container for recombining oxygen gas and hydrogen gas generated in the cell to water.

28. An assembly in accordance with claim 27 further comprising a cage secured to said body for supporting said catalyst container, said catalyst container fitting within said cage.

29. An assembly in accordance with claim 28 wherein said cage is secured to the underside of said vent body.

30. An assembly in accordance with claim 27 wherein said vent body has a recess in which said catalyst container is supported and a retainer fixed to said vent body for securing said catalyst container within said recess.

31. A method according to claim 1 wherein the open circuit voltage of the cell is about 2.15 volts and the charge voltage is no greater than about 2.35 volts.